

Operating Instructions

Multi-Cutter Turning Heads

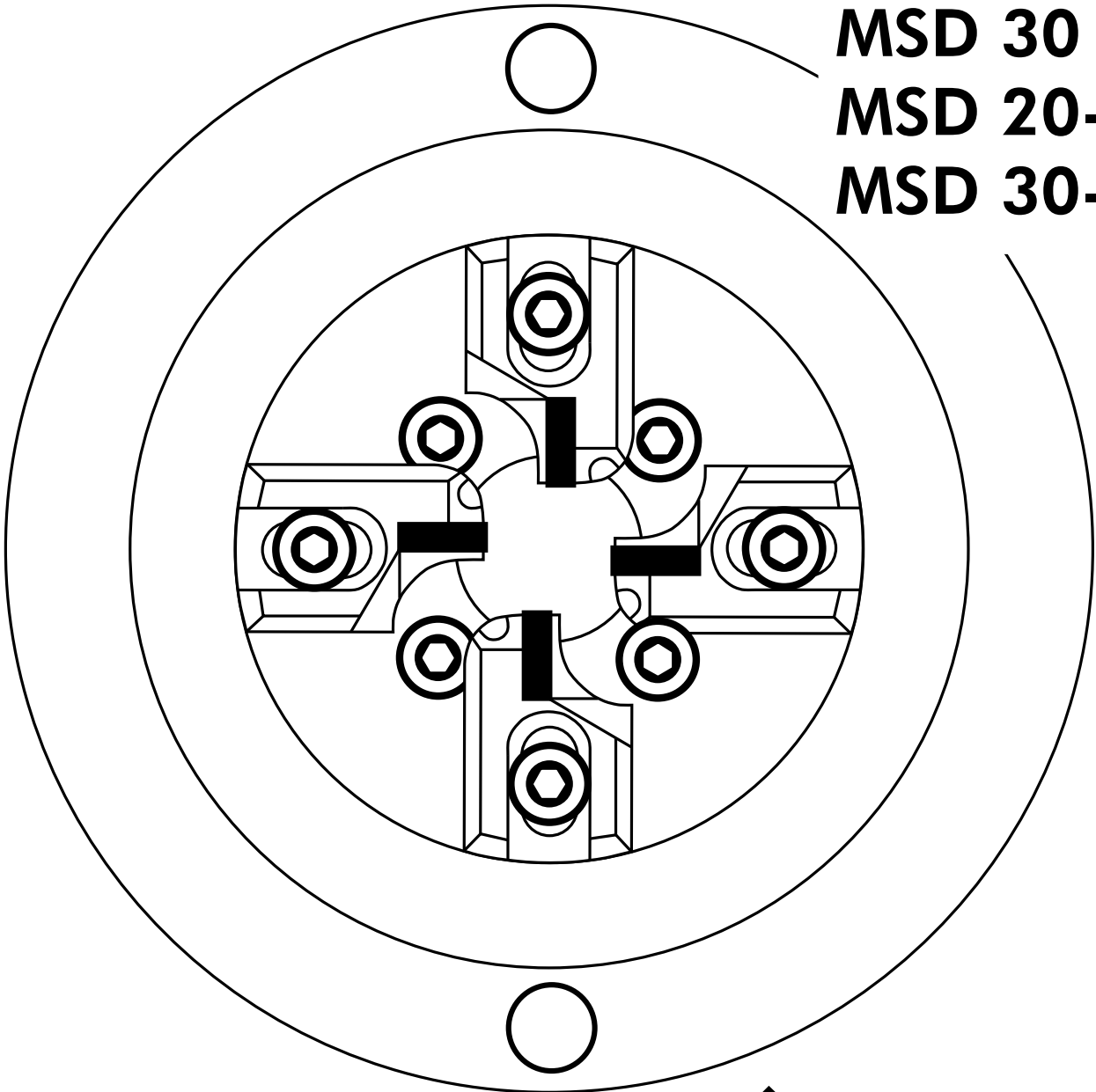
Types:

MSD 20

MSD 30

MSD 20-R

MSD 30-R





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A. Preface

Dear customer,

congratulations on the purchase of this WAGNER® product! You bought a high-quality commodity, which facilitates effective and economic operation. Our Multi-Cutter Turning Heads are known for their high quality and long-life cycle. We hope that you are fully satisfied with our products.

This manual is made to help you taking the first steps with your new WAGNER® product, explain the operation and point out possible hazards.

After-Sales Service:

If you need further advice, training or ulterior help or if you are not satisfied with your WAGNER® product, please contact us! Our sales team is at your disposal.

CAUTION: Please implicitly read the operating instructions before initial operation and follow the safety instructions!

The contents of this manual should be read, understood and followed in every aspect by everybody involved. This is especially true for the safety instructions and notes on hazards found throughout this manual (see chapter B. »Safety instructions«).

Following these instructions will help avoid accidents, mistakes and malfunctioning.

This documentation includes all information necessary for using and maintaining your WAGNER® Multi-Cutter Turning Head. The documents are up-to-date at the time the product was manufactured.

Use only these documents when working with the Multi-Cutter Turning Head.

WAGNER® WERKZEUGSYSTEME MÜLLER GmbH reserves the right to make technical changes to improve the product, if and when appropriate.

If the instructions in this manual are not followed, and this negligence results in mistakes, damages, loss of production, etc., WAGNER® WERKZEUGSYSTEME MÜLLER GmbH will not be responsible for any subsequent damages.

Due to copyrights, we must point out that this manual is for internal use only. Providing this manual to third parties is prohibited.

»Regulations for the prevention of industrial accidents«

During operation, maintenance and repair the respective national and international »regulations for the prevention of industrial accidents« apply in addition to the previously listed instructions. The operating instructions, particularly the chapter »Safety instructions«, has to be read in any case. Following the safety instructions and legal regulations helps to prevent doing damage to persons, machines and our product.



Warranty

In case of buying and using *original* WAGNER® spare parts and accessories, we guarantee proper operation of the Multi-Cutter Turning Head.

Limited liability:

CAUTION: Do not use this product for any other purpose than its designated use! Follow the safety instructions and notes on hazard!

Using the product only by trained specialists, otherwise its use may constitute a risk to life and limb of the user and cause damage to material property. For such cases, the manufacturer declines all responsibility.

We exclude any warranty for damage of persons, machines and our products, in case of:

- improper mounting and operating
- using no original spare parts
- removing components and assemblies
- arbitrarily modifying our products
- using broken rolling attachments.

When using accessories which are not made by WAGNER® or explicitly approved by us, we exclude any warranty.

Generally, we are not liable for damages of all kind caused by removing safety equipment on the machine. We imply that our products are only set up on technically proper operating machines.

Specified operation

CAUTION: Do not use this product for any other purpose than its designated use! Follow the »safety instructions and notes on hazards«!

This product should only be used by trained specialists, otherwise its use may constitute a risk to life and limb of the user and cause damage to material property. For such cases, the manufacturer declines all responsibility.

Do not use force when mounting, demounting and operating. You could otherwise damage the attachment or the machine.

Initial Operation

Please carry out an operational check before initial operation of the Multi-Cutter Turning Head.



B. Safety instructions

Following the safety instructions and the notes on hazard makes sure that the Multi-Cutter Turning Heads are used se-curely.



- Persons in charge of operating, maintaining and repairing always have to read and understand the manual and the safety instructions. People who are under the influence of alcohol and/or drugs may cause accidents!

- When mounting, please bear in mind the weight of the Multi-Cutter Turning Head and, if necessary, lift by means of a lifting equipment.

- Take care that the cutting sides between the attachment and the machine are clean. Dirt may affect the precision of the workpiece.



- Generally, shut down the machine at the main switch when mounting the attachment. Make sure that the spindle cannot start unexpectedly when exchanging the plates.

- Remove all tools and inspection equipments from the working chamber of the machine before setting into operation. **There is a risk of injury by centrifuging tools and equipment!**

- Close the safety gate or protection cover before operating! Hurtling chips and broken attachments or workpieces may cause damage to people and machines.

- Make sure that the Multi-Cutter Turning Head cannot disengage during operation.



- When closing the Multi-Cutter Turning Head do not touch the head, do not touch rotating tools: **risk of injury!**



- Please check and handle the reversing plates extremely carefully. The plates have square edges. If necessary, wear safety gloves!

- Please make sure the Multi-Cutter Turning Head is protected and fastened appropriately when transporting.

1.0 Operation of MSD



1.1 MSD 20 / MSD 30 Stationary

The inserts are mounted into insert holders which are screwed on to the slide [3]. Both screw surfaces are provided with precision serrations enabling tip holders and slide to be adjusted in 1 mm steps to preset the turning diameter.

The cutting forces are directed to the cam ring [8] via guide bolts. The cam ring absorbs these forces and also raises the cutters.

To turn the cam ring and thus adjust the turning diameter, tighten one of the screws [12] in the adjusting ring [11] and loosen the other.

A second turning system for the cam ring is provided to raise the cutters or close the head.

The closing lever [24] turns the cam ring [8] until the locking bolt [15] engages in the locking bushing [9]. To open the head the locking bolt is pressed back. This is effected

- by external release via release bolt [17]
- by internal release via internal stop

The compression spring [13] is pretensioned when the head is closed, and turns back the cam ring. This raises the cutters by 0.2 mm.

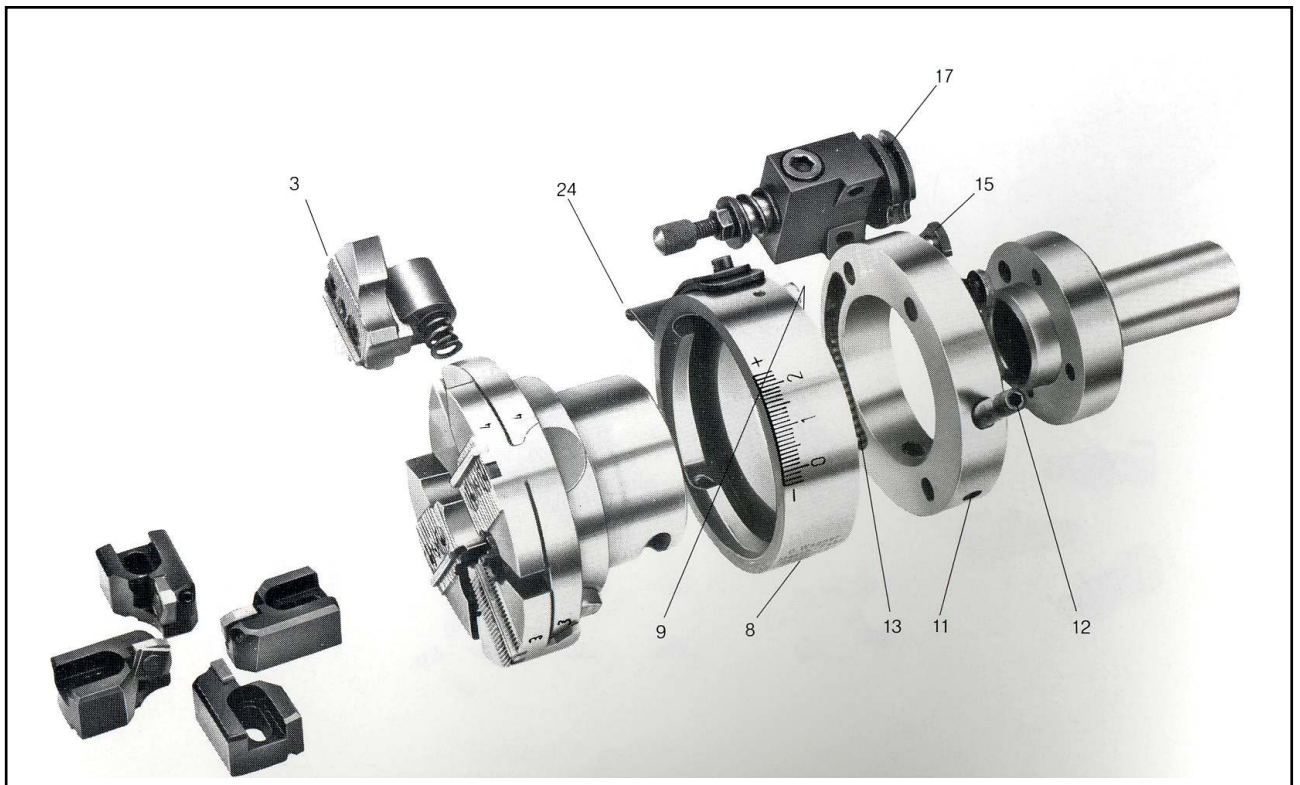


Fig. 1: MSD 20 and MSD 30 stationary.



1.2 MSD 20-R / MSD 30-R Rotating

The inserts are mounted into insert holders which are screwed on to the slide [3]. Both screw surfaces are provided with precision serrations, enabling insert holder and slide to be adjusted in 1 mm steps to preset the turning diameter. The cutting forces are directed to the cam ring [8] via guide bolts of the slides.

The cam ring absorbs these forces and also raises the cutters.

To turn the cam ring and thus adjust the turning diameter, tighten one of the screws [12] in the adjusting ring [11] and loosen the other.

A second turning system for the cam ring is provided to raise the cutters or close the head.

By axially pushing the control ring [18] to the front of the turning head the cam ring is turned via the bevelled points of the locking bolt [15] until the cylindrical pad of the locking bolts engages in the locking bushings [9]. The compression springs [13] are tensioned during this procedure. When the control ring is pushed back the locking bolts spring out of the locking bushing and the compression springs turn back the cam ring. By this means the cutters are raised by 0.2 mm.

MSD 20-Ri / MSD 30-Ri

The function and actuation of the heads with internal control is almost identical with those with external control. In contrast to those, the actuation for opening and closing, however, is effected on an inside actuation element at the real end of head. For this purpose, see the figures on pages 11, 22 and 28.

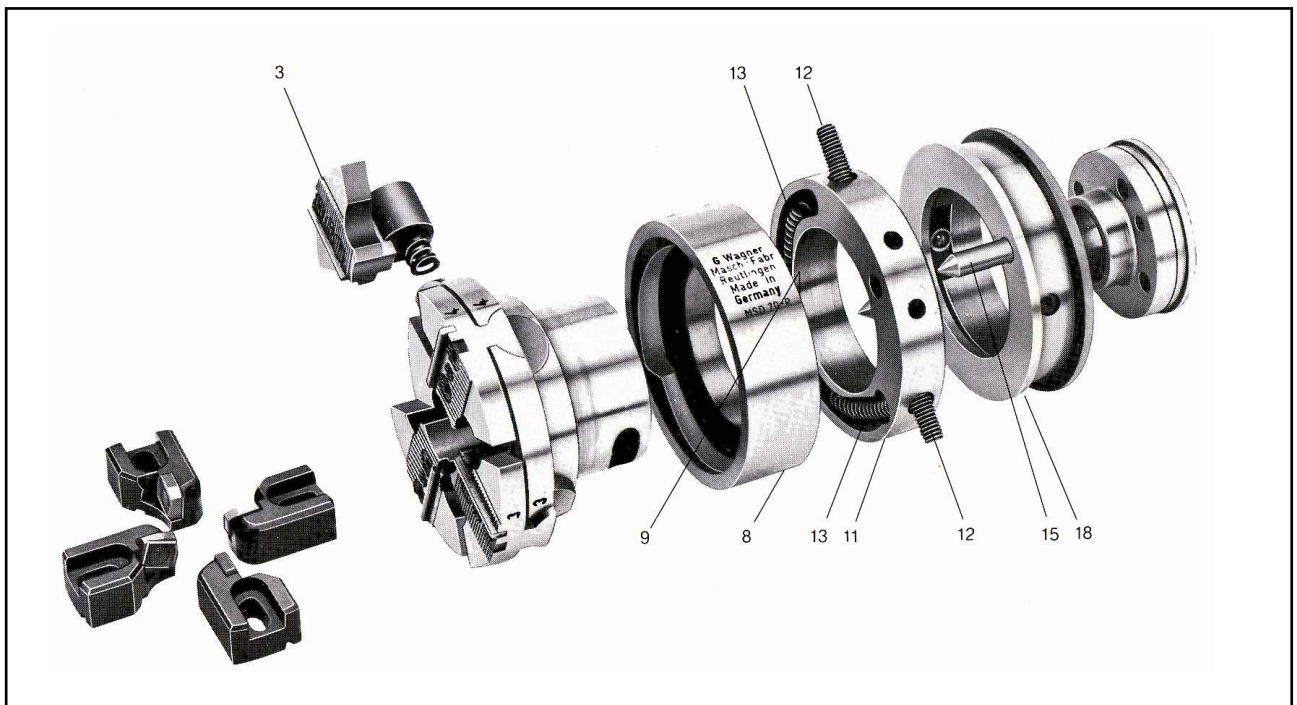


Fig. 2: MSD 20-R and MSD 30-R rotating

2.0 Handling

2.1 Installation of the carbide inserts

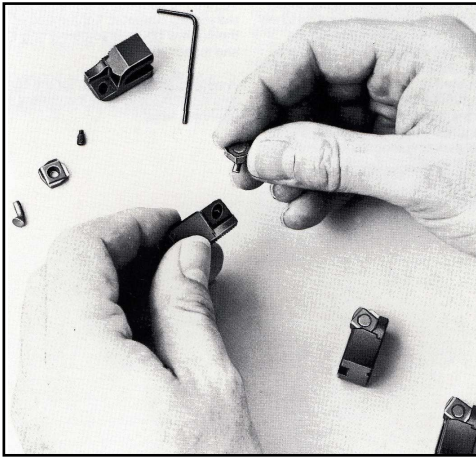


Fig. 3: Installation of the carbide reversing plates.

Exact positioning of all four cutters is essential for good turning results. Great care should therefore be taken when installing the reversing plates. Clear the reversing plate seat and the reversing plate and check for any signs of damage. When changing the reversing plates look out for any burr formation on them.

The clamping pin is inserted in the reversing plate, both are positioned on the reversing plate seat and firmly pressed onto the support surface by means of the locking screw. After tightening, check the insert position.

2.2 Installation of insert holders

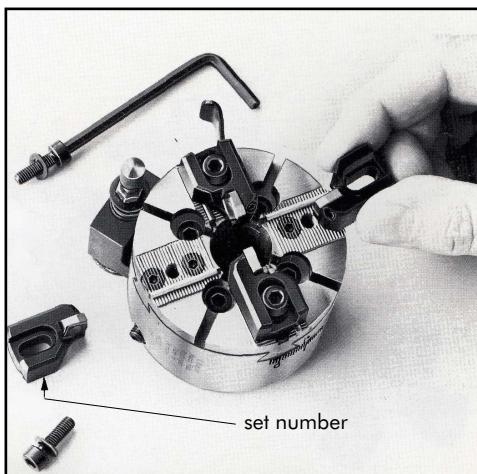
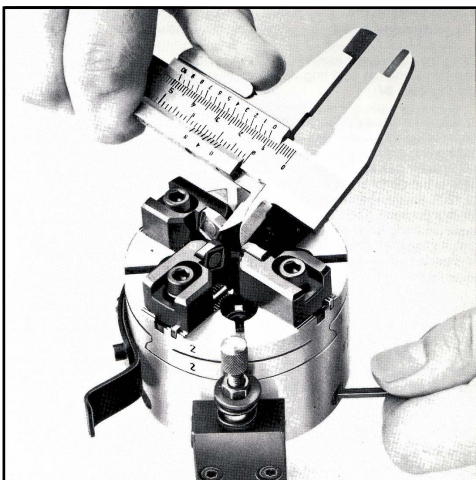


Fig. 4: Installation of the reversing plate holders.

Care should also be taken when positioning the reversing plate holders as this can directly influence the cutting precision. When resetting the turning diameter the diameter fine adjustment should be in centre position.

Install the reversing plate holders in such a manner that the distance between the cutters is ± 1 mm of the diameter to be turned. Pay particular attention to the central position of the holders.

CAUTION: Use holders of the same set number only!



CAUTION: Head must be closed for setting.

Fig. 5: Mounting the reversing plate holders to suit the turning diameter.

2.3 Fine adjustment of the turning diameter

The turning diameter is set by turning the cam ring [8] via adjusting screws [12]. The screws are adjusted against each other and then retightened. The scale on the head itself indicates graduations of 0.1 mm for turning diameter adjustments.



Fig. 6: Fine adjustment of the turning diameter

3.0 Control of MSD stationary



3.1 Closing the turning head

Bring the cutters into working position by turning the cam ring via the closing lever [24].

A suitable closing device can easily be installed of due to the very slight turning angle of only 8° . The position of the closing lever is infinitely adjustable at the periphery within a range of 120° .

Several bores are available for this purpose. The distance between is bridged by slots on the closing lever. A laminated spring [25] is provided to fix the closing lever into position.

When setting the closing unit make sure it closes properly as the locking system on the head has no override.

When resetting the diameter the position of the closing lever changes. It is therefore essential to check or re-adjust the closing lever.

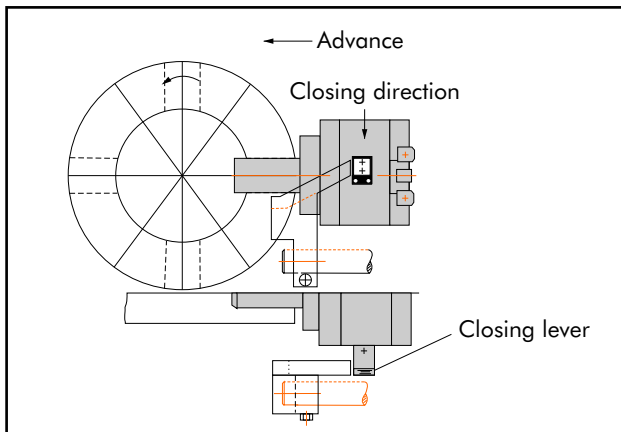


Fig. 7: MSD closing by means of turret advance

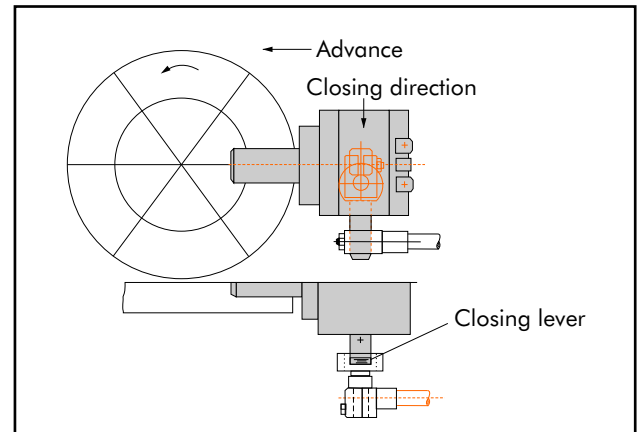


Fig. 8: MSD closing during indexing of turret.

3.2 Opening the turning head

by external release

The locking bolt is released by pressing the adjustable release bolt [17]. The cam ring turns and the cutters are raised. The release bolt can be operated during the feed movement by means of a stop or by an additional movement, for example, by the cross slide.

by internal release

The locking bolt is released by pressing the adjustable internal stop. The cam ring turns and the cutters are raised. The internal stop is operated by means of the feed movement.

When activating the release by means of the feed motion (both external or internal release) it is essential that the feed movement is switched off as soon as the head opens.

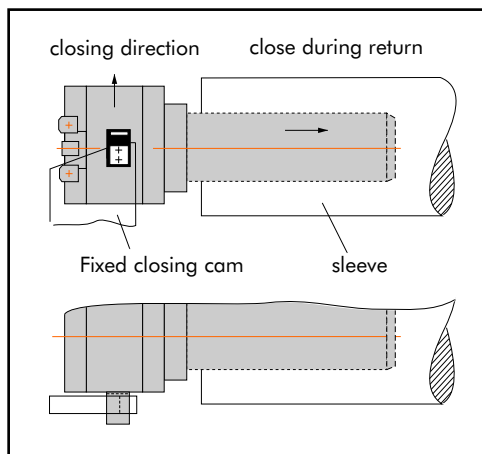


Fig. 9a: MSD closing by means of sleeve return.

Opening and closing of MSD-R in stationary application, especially on multi-spindle-automatics.

The turning head is closed and opened through axial movement of the closing ring by means of a control ring (see fig. 9b). The axial movement is limited by stops. For closing the stops are mounted on the guide bead of the axial slide of the machine. The opening stops can be mounted as above or on the cross slide.

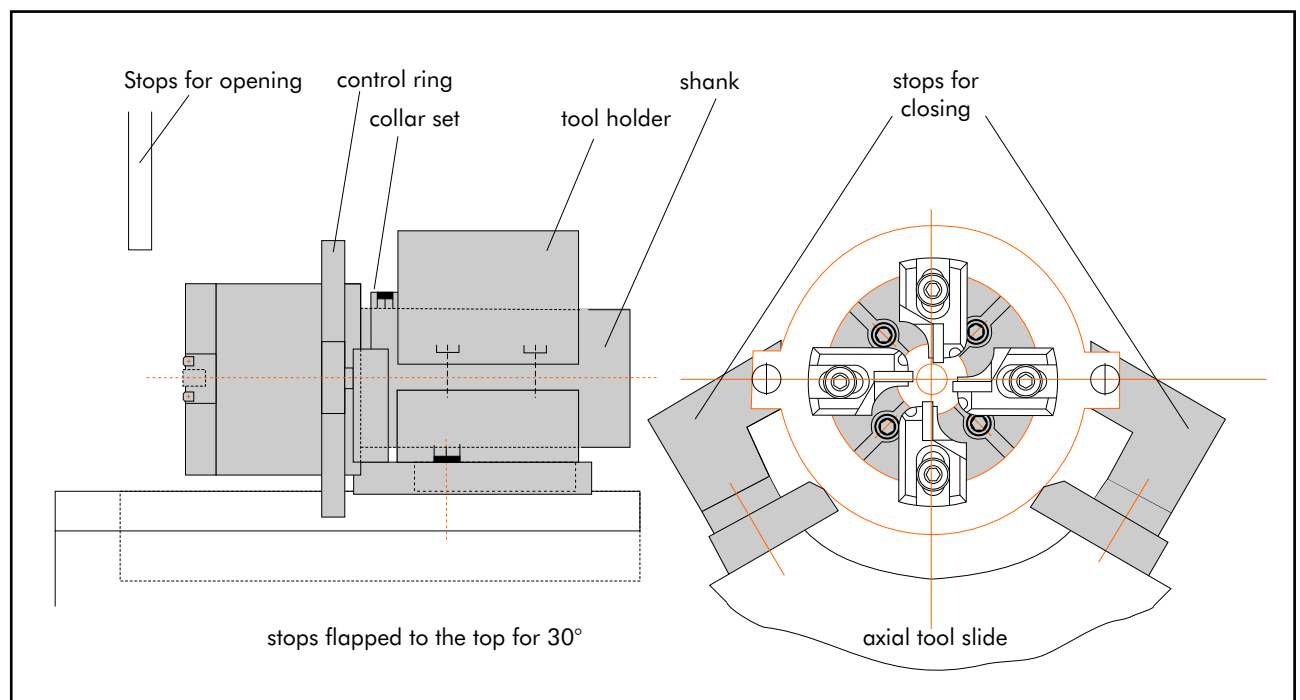


Fig. 9b: Opening and closing of MSD 20-R in stationary application.



4.0 Control of MSD rotating

4.1 Closing the turning head

Speed r.p.m.	Closing force N (approx.)
0	400
1000	400
2000	450
3000	500
4000	650

Table 1: Required closing forces

Bring the cutters into working position by turning the cam ring. The turning motion of the cam ring required to close the head is effected by axial movement of the control ring [19].

Movement of the control ring can be initiated by fixed stops in the foremost and rearmost position, e. g. on sleeve or slide units. The movement of the control ring can also be controlled via pneumatic or hydraulic cylinder.

To keep frictional forces to a minimum during transmission it is recommendable to install an anti-friction roller bearing between the control ring and the operating elements (for suitable bearing see dimensions 7.3 on page 21).

Movements in the case of design with internal control are effected in the same way as for external control by means of control rod via spindle.

4.2 Opening the turning head

By pushing back the control ring [19] the lock is released. The cam ring turns and the cutters are raised.

The movement of the control ring can also be controlled by means of pneumatic or hydraulic cylinders.

Internal control movements are effected in the same way as for external control.

Stop control should only be used for speeds up to max. 3000 r.p.m.

Fig. 10: MSD-R opening and closing with stops on sleeve unit.

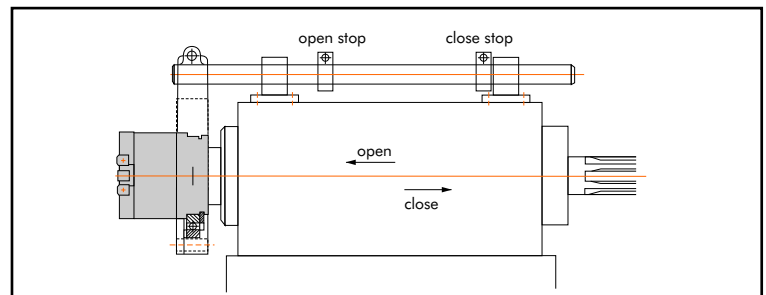
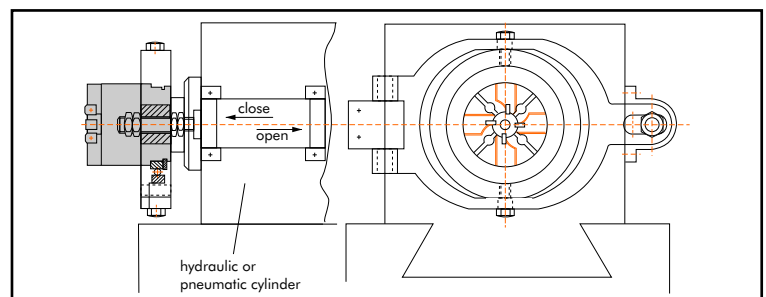
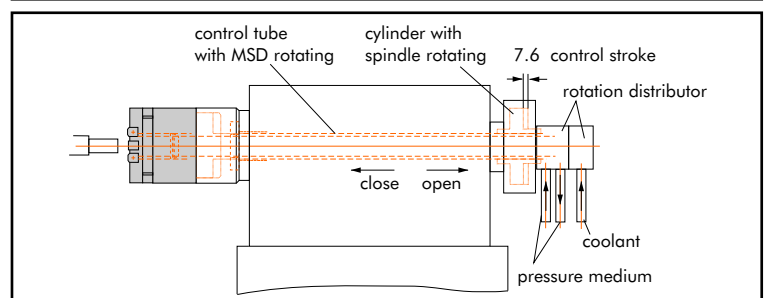


Fig. 11: MSD-R opening and closing with external control on slide unit.



opening function possible
MSD 20-R(i) up to = 4000 r. p. m.
MSD 30 R(i) up to = 2300 r. p. m.

Fig. 12: MSD-R(i) opening and closing with internal control on slide unit.

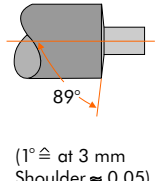
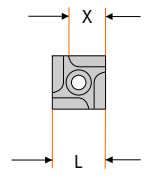
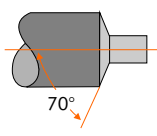
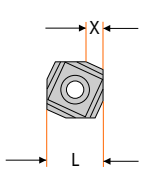




5.0 Application of the MSD

5.1 Selection of carbide reversing plates and carbide grades

Reversing plates

Design of the Workpiece	HM-reversing plate	Type	Measurements		Position of the cutting edges	Cutting Angles	Angular Radius 0.1 mm	Article-Numbers			
			L mm	X mm				K 10	P 25	CM 3	HT 2
 (1° ≅ at 3 mm Shoulder ≈ 0,05)		W 01	9,5	4,5	90°	20°	R 00	721216			
							R 02			740414	
							R 04	718873		730000	734084
							R 08	733155		740812	
							R 10	725954			
							R 12	733157			
							R 20			730213	
		0°	R 04	725619							
			R 16	730200							
		W 02	8,0	3,5	90°	20°	R 00	721217			
R 04								730002			
0°	R 04					730065					
		W 01	9,5	3,0	70°	20°	R 00	721213			
							R 04	721212		730001	
						0°	R 04	730066			
							R 16	730205			
		W 02	8,0	2,0	70°	20°	R 00	721215			
							R 04	721630	725993	730003	
						0°	R 04	730067			

How to order:

10 pieces MSD-carbide-inserts W 01 70 20 R 04 K 10 721212. Delivery in boxes of 10 pieces per type.

Carbide grades

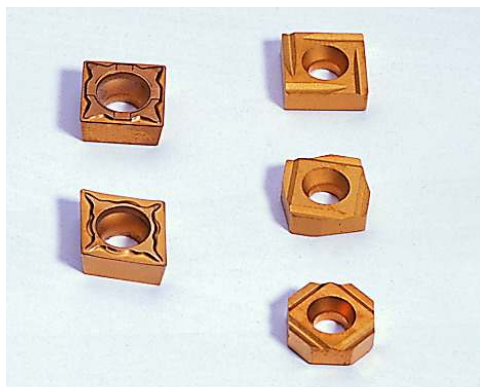


Fig 13: Reversing plates

DIN Plates:
Design SCMT and
Design CCMT

WAGNER® - Plates:
90°, 70° and 45°

K 10:

Universal application for all free cutting steels and non-ferrous metals. Shape edge, also for low feeds and finish turning. Universal machining of steels.

P 25

Machining of steels, also for austenitic (stainless steel). Rough turning at low cutting speeds.

CM 3

Multicoating (TIN) with wide range of applications for machining steel. For higher tool life.



5.1 Selection of carbide reversing plates and carbide grades

WAGNER® - Reversing Plate Holders

MSD Type	Turning Range Ø mm	CB-Reversing Plate	RP-Holder Name
20 and 20 - R	2 - 16	W 01	W 01 B5 ...
	6 - 20	W 02	W 02 B5 ...
30 and 30 - R	16 - 30	W 01	W 01 B5 ...

■ There are various types available.



Fig 14: Reversing plate holders for DIN and WAGNER® plates

DIN - Reversing Plate Holders

Design of the Workpiece	Carbide (CB)-Reversing Plate (RP)		RP-Holder Article-Number	Turning Range Ø mm	Turning Range Ø mm
	Design	Name		MSD 20 MSD 20-R	MSD 30 MSD 30-R
		SCMT 09 T 3 ...	742220	2 - 16	16 - 30
		CCMT 09 T 3 ...	742965	2 - 16	16 - 30

Inclination of reversing plate seat $5^\circ \hat{=}$ clearance angle.
Cutting position to centre + 0.2 mm.

In case of diameters less than 4 mm, especially with larger chip depth, it might be better to work with two opposite reversing plate holders only. This allows better chip flow. The feed rate, however, has to be reduced.

How to order:

1 set MSD reversing plate holders: W 02 B5 = 721637

Spare parts package for reversing plate holder

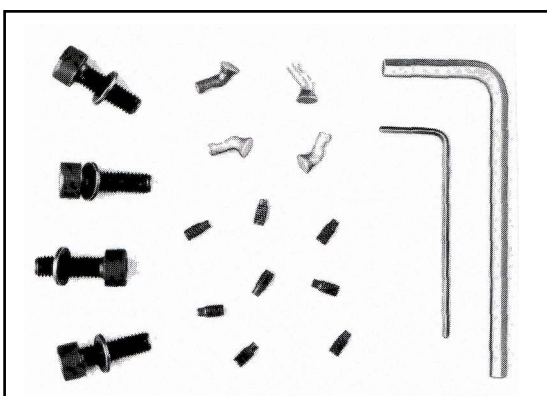


Fig 15: Spare parts package

Article no. 757 117

Contents:

- 4 Clamping pins
- 4 Socket screws
- 4 Lock washers
- 8 Clamping screws
- 1 Allan key 1.5 mm
- 1 Allan key 4 mm



5.2 Cutting speeds

When selecting the cutting speed the following must be considered: material, cutting depth, feed, cooling system and in particular the machine stability.

In our experience a larger amount of material can be cut to good quality at a lower cutting speed.

Example:

Material type	Cutting speed m/ min.
Case hardened steel	60 - 120
Heat treatable steel	50 - 80
High alloyed steel	40 - 70
Non-ferrous metals	80 - 140

Table 2: Cutting speeds

5.3 Feed

The feed for multi-cutter turning is 3 - 6 times higher than when turning with standard single cutters. The stability of the workpiece must be particularly considered when selecting the feed rate. The length between the vice and the top of the workpiece and the cross-section are both to be considered. One can reckon with feed rates between 0.2 and 0.8 mm/rev.

5.4 Coolant lubricant

Standard coolant and lubricant is recommended. The high cutting capacity of the MSD can only be achieved by means of optimum coolant and chip extraction. Coolant supply through head bore is essential. A threaded connection is available on the stationary MSD head.

5.5 Errors: Causes and remedy

Poor turning results as:

- chattermarks on the surface
- non cylindrical diameters

are often caused by:

irregular position of the four cutting edges to centre line.

Therefore please check the following points:

1. Correct position of reversing plates.
Possible errors: tilt, chips, built-up edge, damages.



2. Correct position of insert holders.
Possible errors: damages, chips on or in the serration, not concentrically mounted
3. Concentricity and axial run-out in relation to shank of the head
(see fig. 16)
4. Concentricity and axial run-out of inserts in the machine.
Mount the dial gauge in the chuck or collet for inspection
(analog fig. 16)

Concentricity and axial run-out should be less than 0.03 mm!

Possible errors: Mismatch of head and shank or spindle, misalignment of workpiece to tool carrier (spindle, turret)

Please note, that unstable conditions of workpiece and/ or machine may cause chattered or conical workpieces. A decreasing diameter toward the turning head hints to this fact.

A decreasing diameter toward the work clamping device indicates misalignment of clamping and turning head.

The verification of concentricity of the head can be done on the external diameter of the head core on »A«.

This is valid for heads:

MSD 20 from serial no. 17

MSD 20-R from serial no. 07

MSD 30 from serial no. 03

MSD 30-R from serial no. 03

The serial number is engraved on the cam ring below the designation of type.

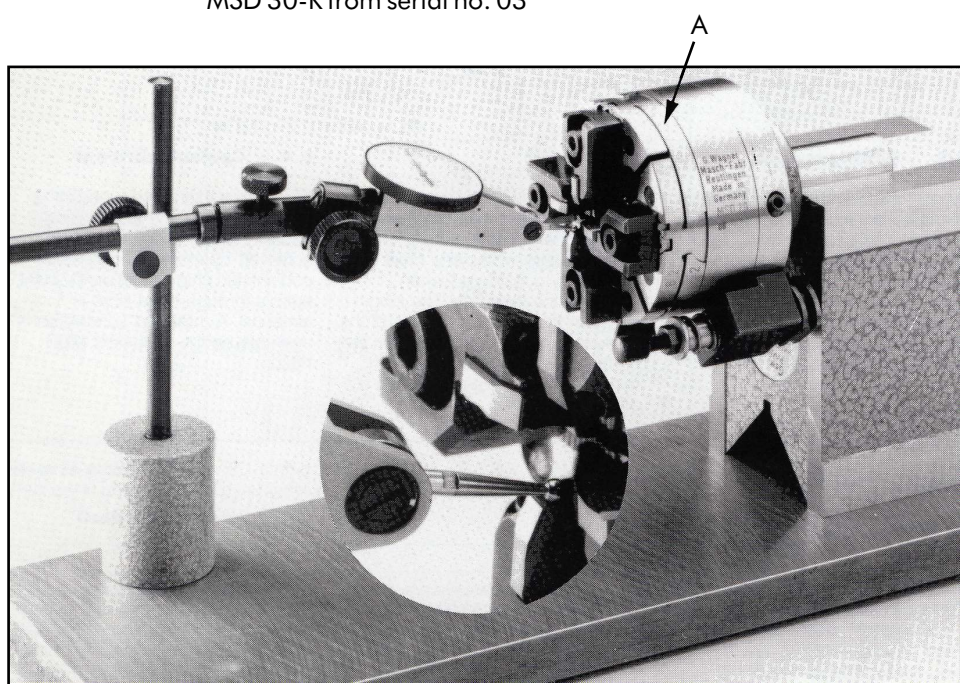


Fig 16: Check concentricity and axial run-out



Maintenance is essential for proper and performance of this precision tool. How often maintenance needs to be carried out depends on the frequency of application. The type of machining, the type and condition of the coolant lubricant are particularly important. Take the turning head apart to carry out thorough maintenance.

6.1 MSD stationary Dismantling the turning head

Please return the head to the manufacturer should repair be necessary.

Unscrew the tip holders, loosen the four socket head cap screws [34], remove shaft.

Only for external release:

Loosen the two socket head cap screws [23], remove support block [16].

Pull out locking bolt [15]. Tighten slides [3] with tightening strap, [see figure 17](#), unscrew stop bolt [14]. Unscrew the two adjusting screws [12], remove adjusting ring [11], remove cam ring [8], remove tightening strap. Remove slide [3].

Clean all parts

Check locking bolt [15] and locking bushing [9] for wear on the locking edges. Exchange both parts if necessary. The parts of the head core [1] slide [3] with guide bolts [4] and cam ring [8] are not exchangeable.



Fig. 17: Use of tightening strap for assembly

Assembly

Clean and oil all slide surfaces. We recommend the use of Molykote-D- Paste for all slide surfaces of the guide bolts and the cam ring. Insert slide [3] and compression spring [7].

Check numbering 1 - 4!

Check smooth running.

Tighten slide with tightening strap. Insert cam ring [8] so that the zero mark on the scale is in correct position.

Insert compression spring [13] in the straight part of the adjusting ring groove. Grease the compression spring with Molykote-D- Paste. Position the adjusting ring [11] on the head core. Screw on the stop bolt [14]. Turn the adjusting ring to the cam ring to enable assembly. Screw on the adjusting screws [12], insert the locking bolt [15], mount the support block [16]. Check the fitting of the release bolt [17], only for external release. Remove tightening strap, mount the shaft. Shafts are interchangeable and can be adapted to the required machine bore.

Check function

Check concentricity and axial run-out, [see page 15](#).

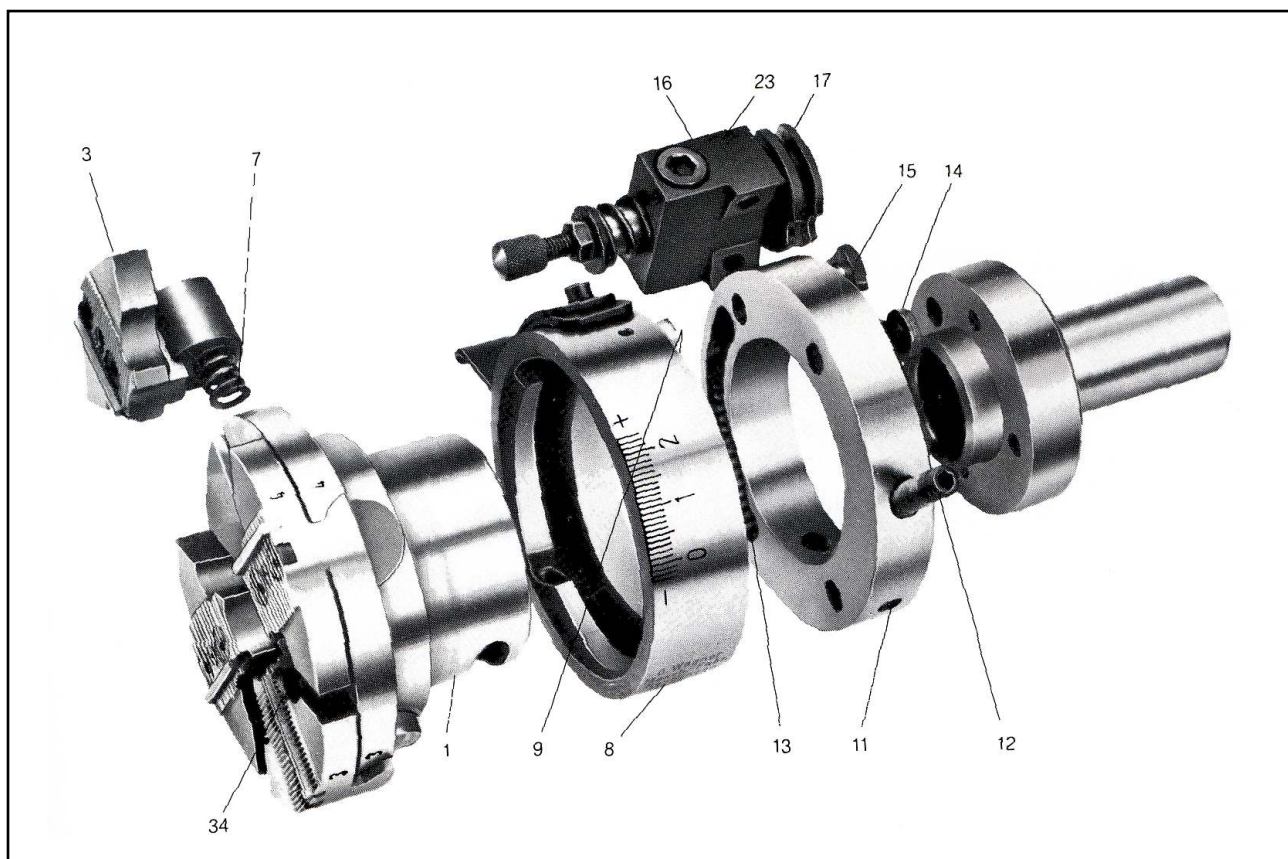


Fig. 18: Maintenance of MSD 20 and MSD 30 stationary

6.2 MSD rotating Dismantling the turning head

Unscrew the tip holders. Loosen the 4 socket head cap screws [28]. Remove the head from the spindle, loosen the two socket head cap screws [17], remove the flange [16] with control ring [18]. Tighten the slides [3] by means of the tightening strap, [see figure 17](#). Unscrew the stop bolt [14], unscrew the two adjusting screws [12]. Remove the adjusting ring [11]. Remove the cam ring [8]. Remove the tightening strap. Dismantle the slide [3] guide bolts [4].

Clean all parts

Check locking bolts [15] and locking bushings [9] for wear. If required exchange both pairs at the same time. The parts of the head core [1], slide [3] and cam ring [8] are not exchangeable. Return the head to the manufacturer should repair be necessary. Check smooth running.

Assembly:

Clean and oil all slide surfaces. Molykote-D-Paste is recommended for all slide surfaces of the guide bolts and the cam ring. Insert slide [3] and compression spring [7].

Check numbering 1-4!

Check smooth running!



MSD rotating Dismantling the turning head

Tighten slide with tightening strap. Insert cam ring [8] so that the zero mark on the scale is in the correct position.

Insert the compression spring [13] in the straight part of the adjusting ring groove. Grease the compression spring with Molykote-D-Paste.

Position the adjusting ring [11] on the head core. Screw on the stop bolt [14]. Turn the adjusting ring to the cam ring to enable assembly. Screw on the adjusting screws [12]. Position the control ring [18] with closing bolts. Move the control ring to closed position. Insert flange [16] and tighten. Remove the tightening strap.

Check function

Check concentricity and axial run-out, [see page 15](#).

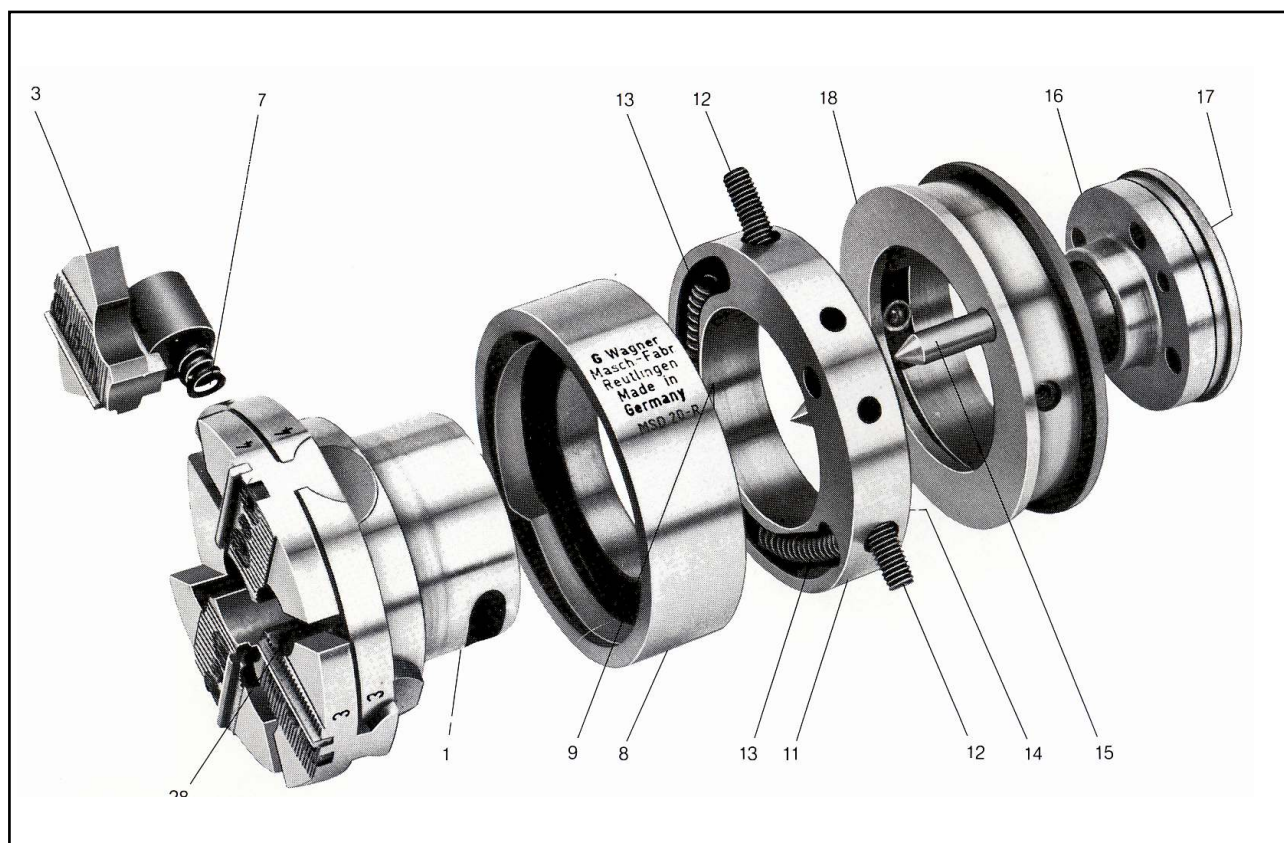


Fig. 19: Maintenance of MSD 20-R and MSD 30-R rotary



7.0 Dimensions

7.1 MSD 20 and MSD 30 stationary with external release

Type Article no.	Turning Head					Shank						
	D ₁	D ₂	R ₁	R ₂	R ₃	D ₃	D ₄	L ₁	L ₂	L ₃	K	Part no.
MSD 20 718 812	70	20,5	42	52	68	20	12	74	46	108	BSP ¼	718 828
						25	16	74	56	118	BSP ⅜	721 672
						30	16	74	63	125	BSP ⅜	724 377
						40	20	74	120	182	BSP ½	721 721
						¾"	11	74	46	108	BSP ¼	718 840
						1"	16	74	56	118	BSP ⅜	721 674
						20 NC	20	76,5	40	71	–	721 972
						30 NC	20	87	55	82	–	730 010
MSD 30 721 760	84	32	49	59	75	25	16	74	56	118	BSP ⅜	721 069
						30	21	74	63	125	BSP ½	721 759
						40	32	74	120	182	BSP ½	721 782
						50	30	74	120	182	BSP ½	721 833
						1"	16	74	56	118	BSP ⅜	721 758
						2"	30	74	150	212	BSP ½	725 540
External release MSD 20/ 30 Article no. 757 111												

Measurements in mm, for shank D₃ partly in inches
 ■ as per DIN 69 880

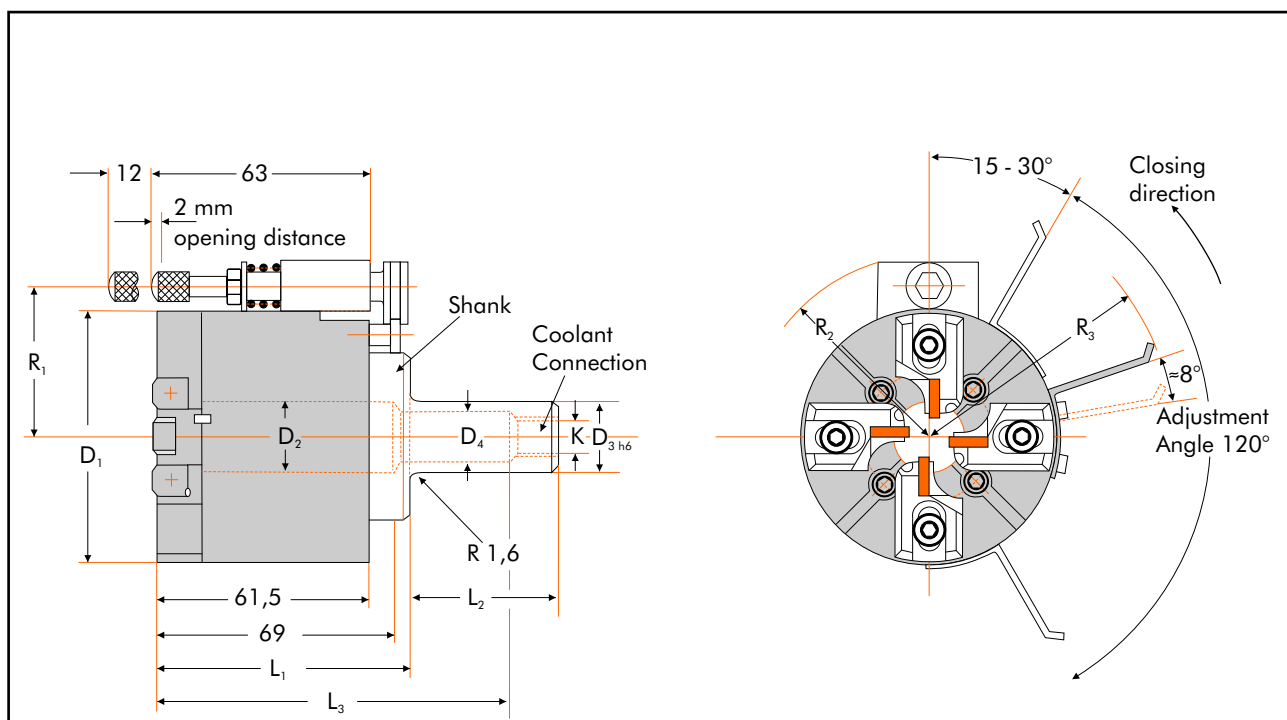


Fig. 20: Dimensions



7.2 MSD 20 and MSD 30 stationary with internal release

Type Article no.	Turning Head				Shank				
	D ₁	D ₂	D ₄	R ₃	D ₃	L ₁	L ₂		Part no.
MSD 20 718 812	70	20,5	18,7	68	20	79	46		723 474
					25	79	56		723 475
					30	79	63		730 541
					40	79	120		757 037
					¾"	79	46		723 461
					1"	79	56		723 473
					30 NC ■	79	55		730 110
MSD 30 721 760	84	32	31	75	25	79	56		757 039
					30	79	63		757 040
					40	79	120		757 041
					50	79	120		757 044
					1"	79	56		757 042

Measurements in mm, for shank D₄ partly in inches

■ as per DIN 69 880

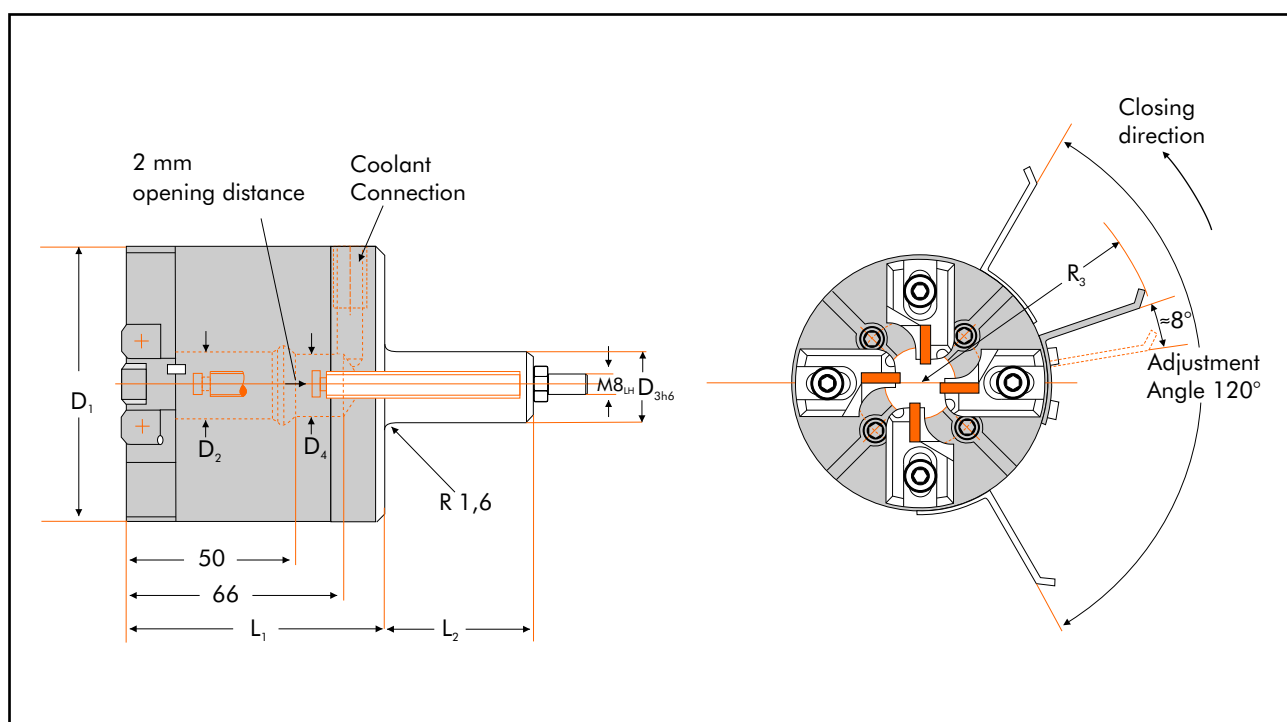


Fig. 21: Dimensions



7.3 MSD 20-R and MSD 30-R rotating with external control

Type	Turning Head		Spindle Head (Adapter)				Ball bearing B	Control ring Part no.
	D ₁	D ₂	D ₃ j6	D ₄ max.	D ₅	D ₆		
MSD 20-R	70	20,5	25	20,5	35	47	11 grooved bearing 16013 C 3	757 051
MSD 30-R	84	32	39	32	49	61	10 grooved bearing 61816 C 3	757 052

All Measurements in mm

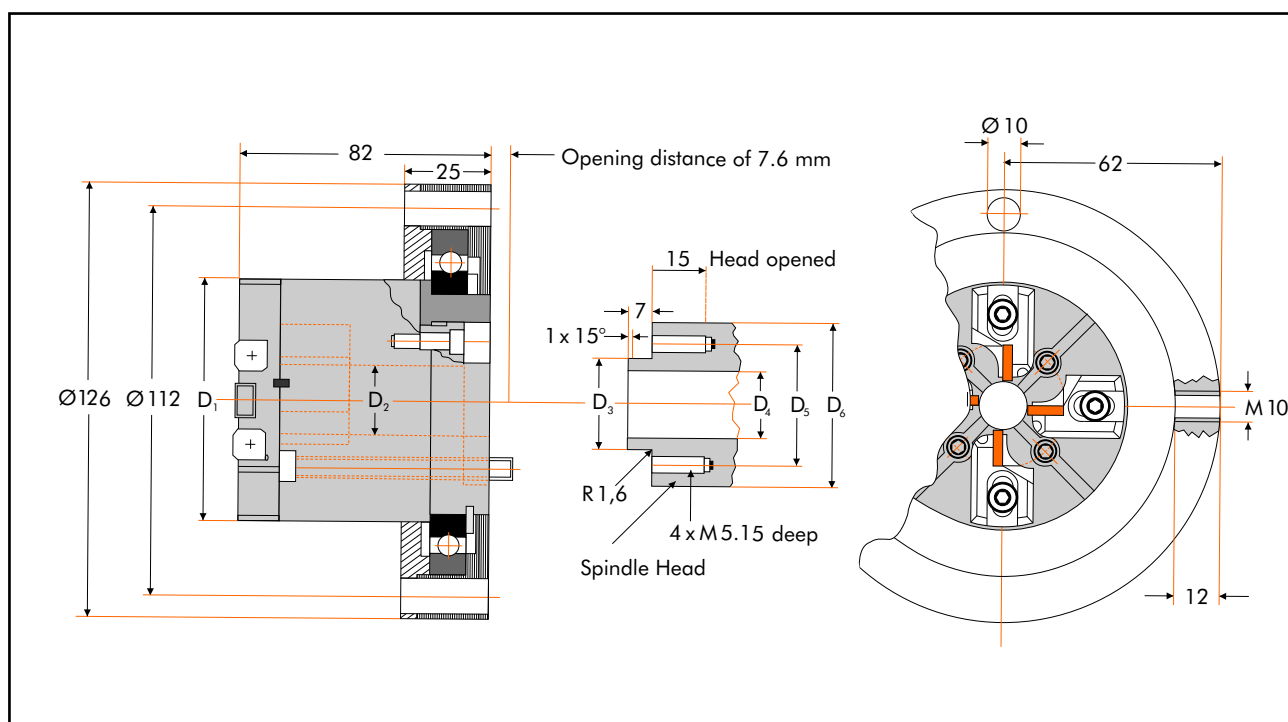


Fig. 22: Dimensions



7.4 MSD 20-R(i) and MSD 30-R(i) rotating with internal control

Applicable with opening function
MSD 20-R(i) until about 4000 min⁻¹
MSD 30-R(i) until about 2300 min⁻¹

Type	Turning Head			Spindle Head (Adapter)			
	D ₁	D ₂	D ₆	D ₃ j6	D ₄	D ₅	D ₈
MSD 20-R(i)	70	20,5	18,5	45	min. 22 max. 28	35	M 18 x 1 LH
MSD 30-R(i)	84	32	32,5	60	min. 36 max. 42	49	M 32 x 1 LH

All Measurements in mm

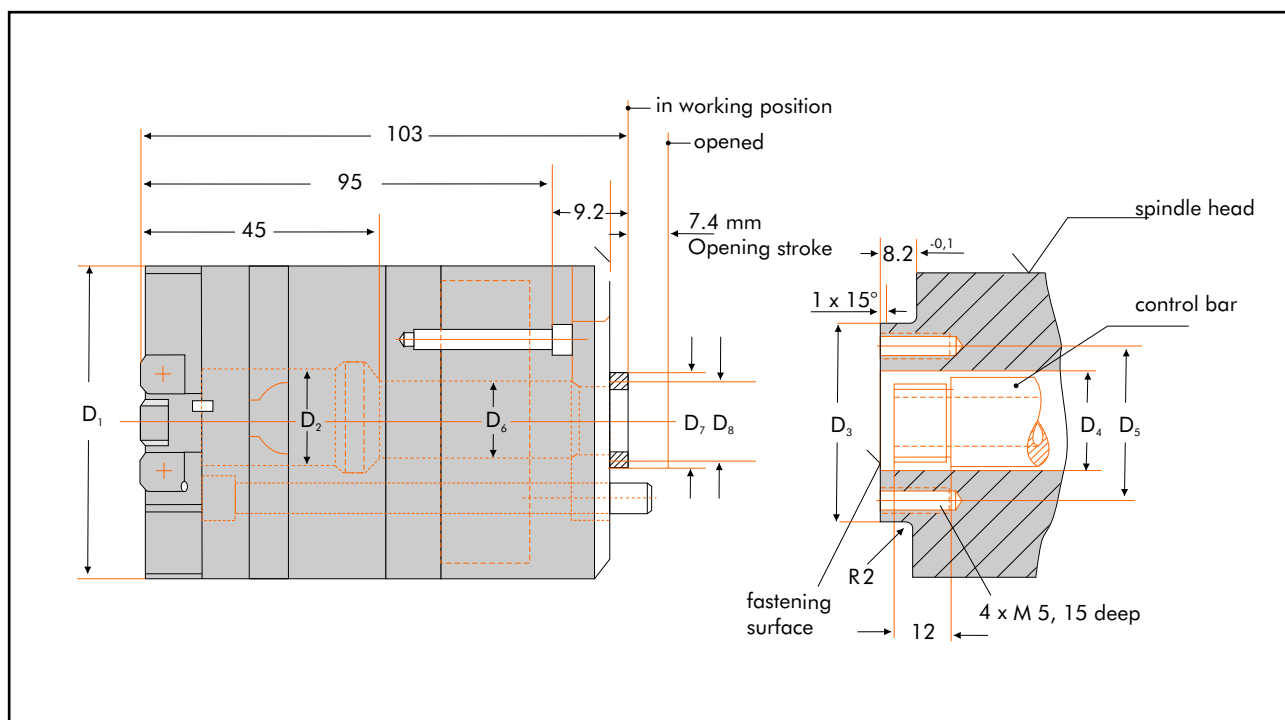


Fig. 23: Dimensions



8.0 Individual parts

8.1 MSD 20 and MSD 30 stationary

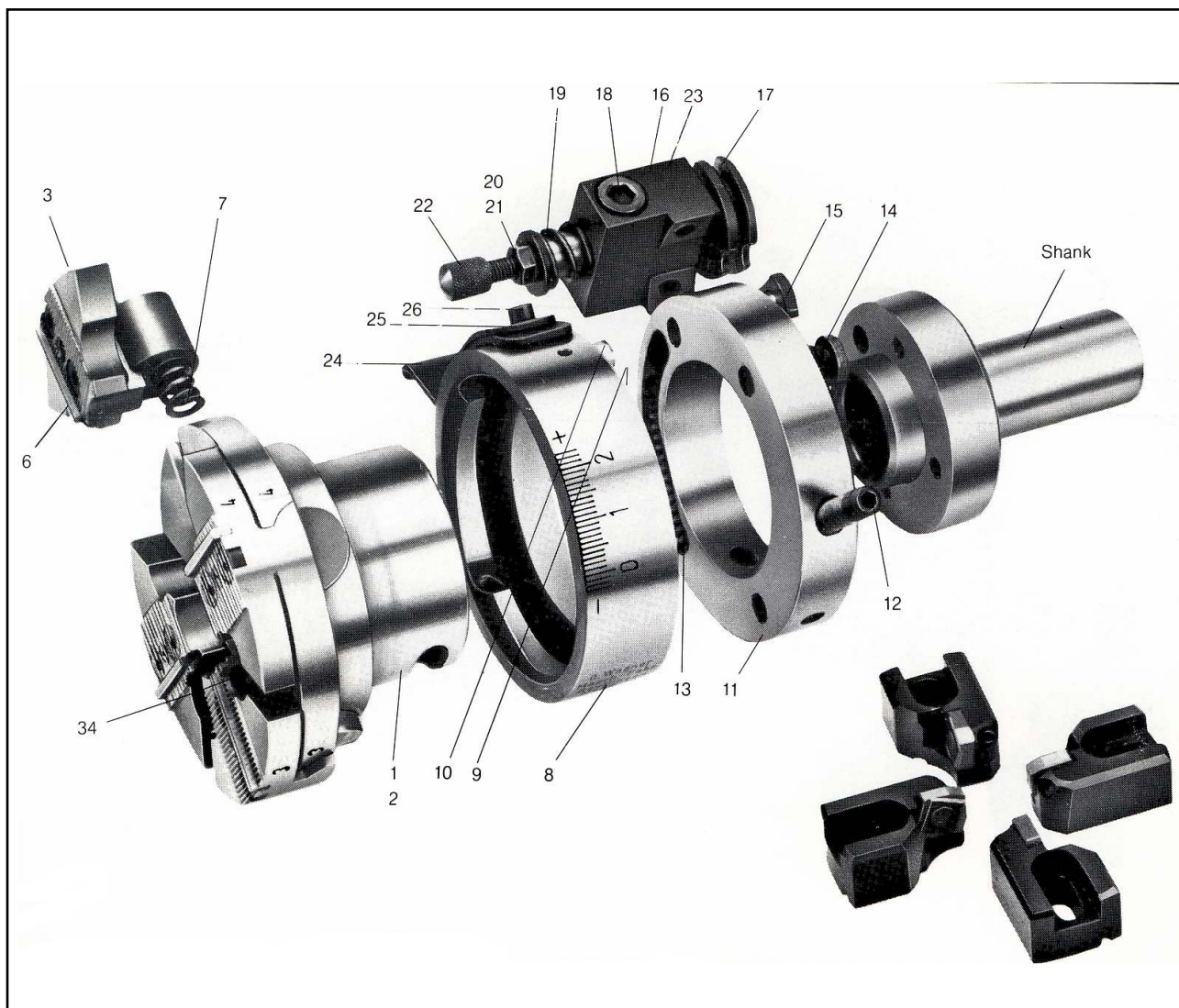
No.	Qty.	Designation	MSD 20 Article no.	MSD 30 Article no.
1	1	Head core	-	-
2	1	Bushing	-	-
3	4	Slide	-	-
6	4	Sliding key	718 819	718 819
7	4	Compressing spring	03 310 181	03 310 181
8	1	Cam ring	-	-
9	1	Locking bushing	721 003	721 003
10	1	Dowel pin, 6 x 16	718 823	718 823
11	1	Adjusting ring	721 002	721 754
12	2	Adjusting screw, M 6 x 25	03 016 131	03 016 131
13	1	Compression spring	03 310 182	03 310 182
14	1	Stop bolt	718 826	718 826
15 [■]	1	Locking bolt	718 827	718 827
16 [■]	1	Support block	718 830	718 830
17 [■]	1	Release bolt	718 831	718 831
18 [■]	1	Stop screw	718 832	718 832
19 [■]	1	Compression spring	03 310 183	03 310 183
20 [■]	1	Lock washers	718 834	718 834
21 [■]	1	Hexagonal nut M 5	02 061 004	02 061 004
22 [■]	1	Adjusting bolt	718 836	718 836
23 [■]	2	Socket head cap screw M 4 x 16	02 015 005	02 015 005
24	1	Closing lever	721 593	721 593
25	1	Laminated spring	721 594	721 594
26	2	Socket head cap screw, M 3 x 8	02 017 003	02 017003
31	1	Allan key, 2 DIN 911	02 677 001	02 677001
32	1	Allan key, 3 DIN 911	02 677 003	02 677003
33	1	Wrench, size 8 mm	02 673 003	02 673003
34	4	Socket screw, M 5 x 45	02 015 063	02 015 063
35	1	Tightening strap	04 065 230	03 892130
305	4	Socket screw M 5 x 45	02 015 063	02 015063

■ Only available for external release.

Parts without an article no. cannot be supplied individually. Should repair be necessary, return the MSD to the factory.

For selection of carbide reversing plates and reversing plate holders, [see page 12 and 13](#).

For selection of shanks, [see page 19 and 20](#).





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8.2 Shank for internal release

MSD 20 and MSD 30 stationary

No.	Qty.	Designation	Ø mm	MSD 20 Article no.	MSD 30 Article no.
1	1	Shank	20	723 469	-
			25	723 471	757 360
			30	730 542	757 384
			40	757 038	757 389
			50	-	730 519
			¾"	721 978	-
			1"	723 470	757 391
			30 NC	730 111	
2	1	Release		723 462	757 366
2	1	Release NC		730 129	
3	1	Locking bolt		723 453	723 453
4	1	Stop spindle		723 468	723 468
5	1	Stop disc		705 677	705 677
6	1	Nut M 8 lh		02 061 506	02 061 506
7	1	Snap ring		02 087 001	01 087 001
8	1	Ball		02 460 112	02 460 112
9	4	Socket head cap screw M 5 x 50		02 015 064	02 015 064
10	1	Compression spring		03 310 084	03 310 085
11 	1	Bushing		723 480	723 480

 not available for all types

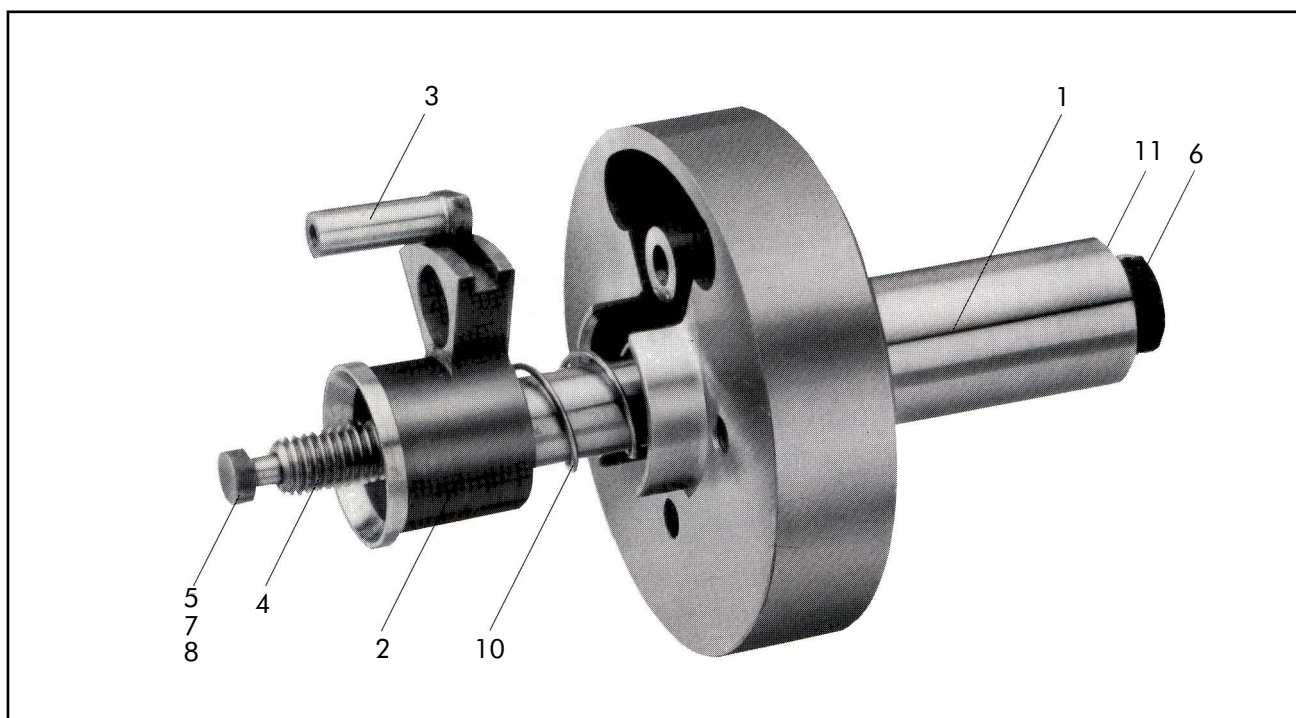


Fig. 25: Ref. spare parts list MSD 20 and MSD 30 stationary



8.3 MSD 20-R and MSD 30-R rotary

No.	Qty.	Designation	MSD 20 Article no.	MSD 30 Article no.
1	1	Head core	-	-
2	1	Bushing	-	-
3	4	Slide	-	-
6	4	Sliding key	718 819	718 819
7	4	Compression spring	03 310 181	03 310 181
8	1	Cam ring		-
9	2	Locking bushing	721 004	721 004
10	2	Dowel pin 6 x 16	718 823	718 823
11	1	Adjusting ring	718 824	721 768
12	2	Adjusting screw M 6 x 25	03 016 131	03 016 131
13	2	Compression spring	03 310 182	03 310 182
14	1	Stop bolt	718 826	718 826
15	2	Locking bolt	718 837	718 837
16	1	Flange	718 838	721 755
17	2	Socket head cap screw M 4 x 16	02 016 004	02 016 004
18	1	Control ring	718 839	721 756
19	1	Circlip, 65 x 2.5 DIN 471	02 084 043	-
		Circlip, 80 x 2.5 DIN 471	-	02 084 049
20	2	Spring pressure pad	03 700 011	03 700 011
27	1	Allen key, 3 DIN 911	02 677 003	02 677 003
28	4	Socket head cap screw M 5 x 55	02 015 065	02 015 065
29	1	Tightening strap	04 065 230	03 892 130

Parts without an article no. cannot be supplied individually. Should repair be necessary, return the MSD to the factory.

For selection of carbide reversing plates and reversing plate holders, [see 5.1 on page 12 and 13](#).

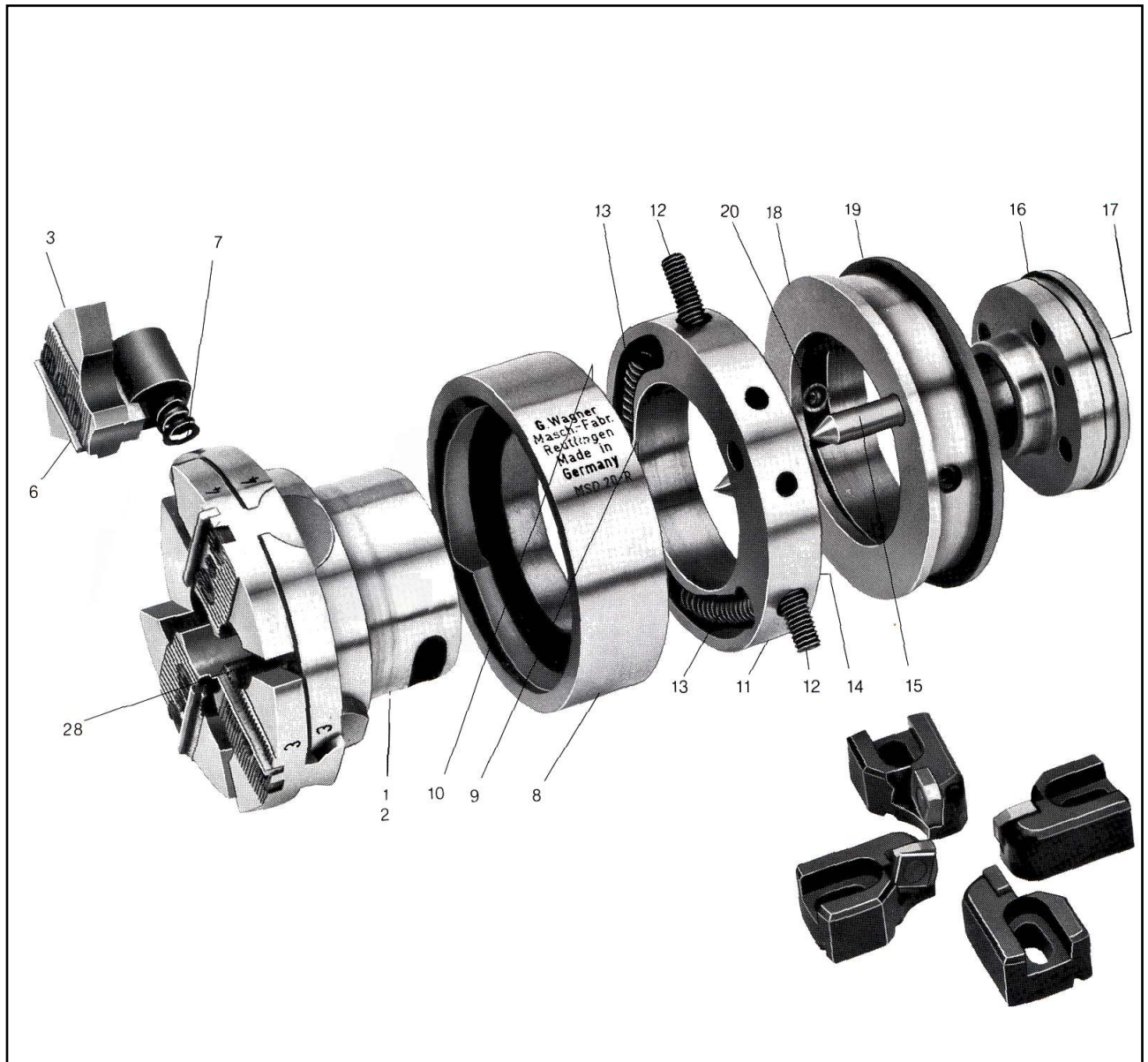


Fig. 26: Ref. spare parts list MSD 20-R and 30-R rotating.



8.4 MSD 20-R(i) and MSD 30-R(i) rotary

No.	Qty.	Designation	MSD 20 Article no.	MSD 30 Article no.
1	1	Head core	-	-
2	1	Bushing	-	-
3	4	Slide	-	-
6	4	Sliding key	718 819	718 819
7	4	Compression spring	03 310 181	03 310 181
8	1	Cam ring	718 821	721 767
9	2	Locking bushing	721 004	721 004
10	2	Dowel pin	718 823	718 823
11	1	Adjusting ring	718 824	721 768
12	2	Adjusting screw	03 016 131	03 016 131
13	2	Compression spring	03 310 182	03 310 182
14	1	Stop bolt	718 826	718 826
15	2	Locking bolt	718 837	718 837
16	1	Control ring	757 024	757 383
17	1	Coupler	757 023	757 382
18	1	Housing	757 022	757 381
19	2	Socket head cap screw M 4 x 30	02 015 010	02 015 010
27	1	Allen key, 3 DIN 911	02 677 003	02 677 003
28	4	Socket head cap screw M 5 x 80	02 015 070	02 015 070
29	1	Tightening strap	04 065 230	03 892 130

Should repair be necessary, return the MSD to the factory.

For selection of carbide reversing plates and reversing plate holders, [see 5.1 on page 12 and 13.](#)

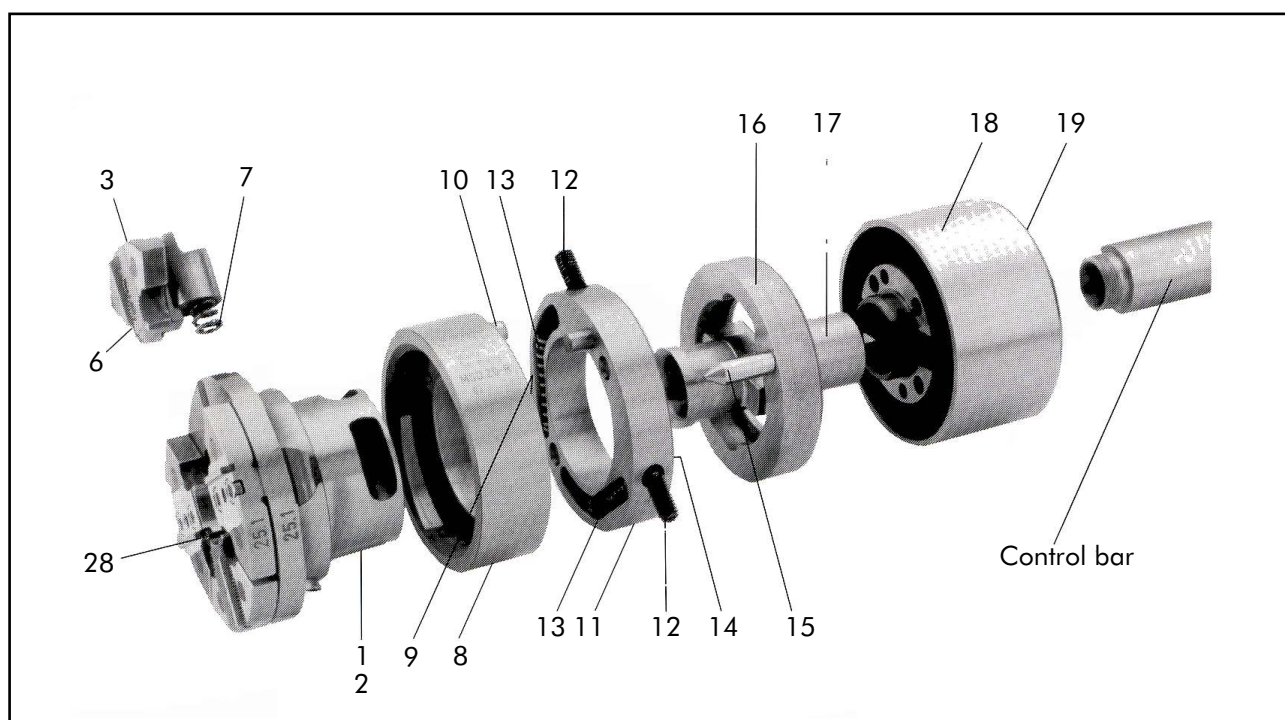
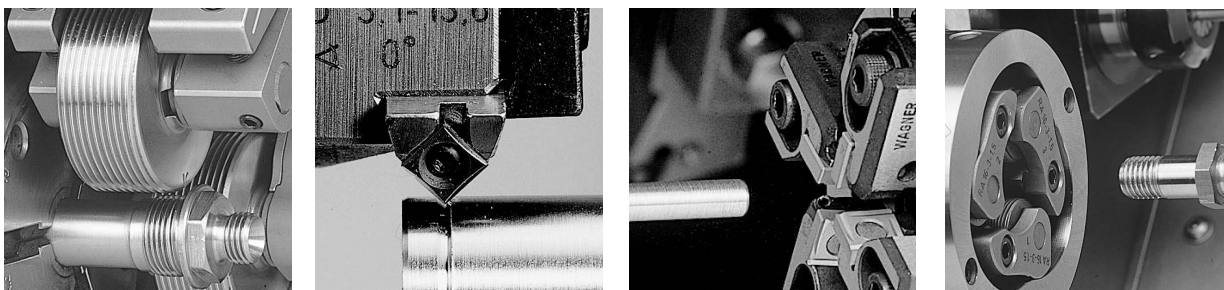


Fig. 27: Ref. spare parts list MSD 20-Ri and 30-Ri rotating



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